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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,418	08/13/2001	Andrew John Aftelak	CM00565P	9541

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Schaumburg, IL 60196

EXAMINER

GOSHTASBI, JAMSHID

ART UNIT	PAPER NUMBER
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2637

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/913,418

Applicant(s)

AFTELAK, ANDREW JOHN

Examiner

Jamshid Goshtasbi-G.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,3,4-6,9-12 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-15 are pending in the application.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The provided abstract is not in a single paragraph. Also, the first line (that seems to be a title) as well as the words "Figure 2" at the end of the abstract should be eliminated.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 4-6, 9, 10, 13, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The terms "relatively", "long ", and "short" in **Claim 4** are relative terms which render the claim indefinite. These terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. "Wide bandwidth" in line 32, and "narrow bandwidth" in line 34, are rendered indefinite by the use of the term "relatively." Similarly, "burst of known data" is rendered indefinite by the use of the term "long" (in lines 32) and the term "short" (in line 35).

The terms "relatively", "long ", and "short" in **Claim 13** are relative terms which render the claim indefinite. These terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. "Wide bandwidth" in line 21, and "narrow bandwidth" in line 23, are rendered indefinite by the use of the term "relatively." Similarly, "burst of known data" is rendered indefinite by the use of the term "long" (in lines 22) and the term "short" (in line 23).

Claims 5, 6, 9, 10, and 14 are rejected as being dependent upon the rejected base claim.

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Claim 15 rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim Rejections – 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Millward et al. (US 6324228 B1) in view of Brueske et al. (US 5894592), and further in view of Hsiung et al. (US 4691176).

As to **Claim 1**, Millward et al. discloses a frequency tracking loop (figs. 1 and 2; frequency tracking loop 110; col. 3, line 67; col. 4, lines 11-12) for a digital radio communications system (mobile communication system 100; col. 3, line 1; cellular phone 105; col. 3, line 67), the frequency tracking loop (Fig. 2) comprising a means for correcting (compensating) frequency offset (mixer 210; col. 4, line 14 and lines 19-21), the means for correcting frequency offset receiving an input radio signal and supplying an output signal; a frequency offset estimator (frequency error estimator 240; col. 4, lines 15-16), supplied with the output signal from the means for correcting frequency offset, for providing an

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estimate of the frequency offset of the output signal (col. 4, lines 27-30); a signal generating means (comprising reference oscillator 260 and frequency synthesizer 270; col. 4, line 18), supplied with a filtered signal (from AFTC filter 370; Fig. 3B; col. 5, line 34 and lines 45-64; through the automatic frequency tracker and controller; Fig. 4; col. 5, lines 64-66; col. 4, line 16 and lines 34-39), for generating an output signal with a frequency dependent on the filtered signal, the output signal from the signal generating means being supplied to a second input of the means for correcting frequency offset (col. 4, lines 38-45).

However, Millward et al. is silent on a variable bandwidth filter, supplied with the estimate of the frequency offset from the frequency offset estimator, for providing a filtered signal; wherein the frequency tracking loop is adapted to change the bandwidth of the variable bandwidth filter in dependence on at least one characteristic of the currently received burst of known data.

In disclosing a wideband frequency synthesizer for direct conversion transceiver (col. 1, lines 7-8; Fig. 2; frequency synthesizer 200; col. 2, line 35), Brueske et al. teaches using a variable bandwidth filter (IM filter 211, col. 4, lines 15-18) supplied a frequency offset (output of the offset mixer 207; col. 4, lines 15-18), wherein the bandwidth of the variable bandwidth filter is programmed (col. 4, lines 19-31) to change (for a wide band operation of a local frequency; col. 4, lines 46-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Brueske et al.

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into the method of Millward et al. because the programmable variable bandwidth filter provides for a wideband frequency synthesizer that can be integrated into a single integrated circuit (col. 2, lines 10-12), allowing it to operate in multiple modes, maintaining high performance.

As to the frequency tracking loop being adapted to change the bandwidth of the variable bandwidth filter in dependence on at least one characteristic of the currently received data, Hsiung et al. discloses an adaptive carrier tracking circuit (Fig. 6; col. 7, lines 15-17), wherein a frequency tracking loop is adapted to change (via channel characteristic estimator 144, col. 7, lines 53-60; col. 14, lines 61-66) the bandwidth of the variable bandwidth filter (adaptive filter 142; col. 7, lines 50-60; col. 14, line 25) in dependence on at least one characteristic of the currently received data (the rate and magnitude of frequency fluctuations of the input signal; col. 7, lines 56-60; col. 16, lines 7-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further incorporate the teachings of Hsiung et al. into the method of Millward et al. and Brueske et al. because it would provide for responding to phase and frequency fluctuations which are too rapid for correction by manual adjustments (col. 2, lines 11-18 and lines 43-45).

As to **Claim 2**, the recited features of the claimed frequency tracking loop (means for correcting frequency offset) correspond with subject matter mentioned in the rejection of Claim 1 above and are similarly analyzed.

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As to **Claim 3**, Hsiung et al. further teaches adapting the frequency tracking of the input signal to change the bandwidth of the variable bandwidth filter (based on an estimated input signal decorrelation time) in dependence on (data concerning the frequency of the input signal, as well as rate and magnitude of phase variations of this signal over) a length of the currently received data (given sampling period; col. 5, lines 40-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further incorporate the teachings of Hsiung et al. into the method of Millward et al. and Brueske et al. because it would provide for means for responding to phase and frequency fluctuations which are too rapid for correction by manual adjustments (col. 2, lines 11-18 and lines 43-45) and to optimize signal tracking during such fluctuations and to minimize noise when the input signal is relatively stable (col. 2, lines 1-6).

As to **claims 11-12**, the claimed method of frequency tracking and all recited features of the claimed method correspond with subject matter mentioned in the rejection of claims 1-3 above, similarly applicable hereto.

Allowable Subject Matter

8. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 4-6, 9, 10, 13 and 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office

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action and to include all of the limitations of the base claim and any intervening claims.

Other prior art cited

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kim et al. (US 6650715 B1) discloses a frequency tracking loop in an apparatus for recovering decision-directed carrier.

Addy (US 5822373) discloses a method and apparatus for optimization of wireless communications and teaches the use of bandwidth adjustable filtering.

Parr et al. (US 5513221) discloses a Doppler bandwidth dependent estimation of a communications channel.

Smith (US 5331299) discloses an adaptive tracking notch filter system.

Tomlinson et al. (US 4961206) discloses a data modem system that uses a variable bandwidth filter.

Leland et al. (US 4348772) discloses a frequency stabilization circuit for a local oscillator.

Desblache (US 4106102) discloses a self-adaptive digital filter for noise and phase jitter reduction.

Sawahashi et al. (ISCAS' 89) presents a variable bandwidth filter using SCF and MOSFET-F filter for use in a mobile radio transceiver.

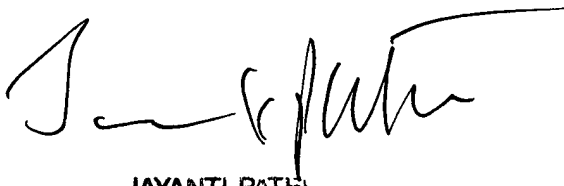
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Contact information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamshid Goshtasbi-G., whose telephone number is (571) 272-3012. The examiner can normally be reached on M-F 8:00/4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JAYANTI PATEL
SUPERVISORY PATENT EXAMINER

Jamshid Goshtasbi-G.
Examiner
Art Unit 2637